Johnson Controls GmbH
Burscheid / Germany
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Method for the treatment of covering materials for interior fitting pieces, in particular for motor vehicles, and interior fitting piece

Description

The invention relates to a method for the treatment of covering materials of vehicle interior fitting pieces, in particular for pieces of trim or seats of a motor vehicle, in which the moisture content of the covering material is temporarily increased, and to a vehicle interior fitting piece treated by this method.

Prior art

A method of the generic type is known in practice. After assembly of the metal structures, the upholstering thereof and the covering of the upholstery with a covering material (for example woven fabric, knitted fabric or leather), the seats which are provided for installation in the interior of a motor vehicle are subjected to a manual treatment with steam. For this purpose, a nozzle which is connected via a flexible tube to a mobile steam generator is placed onto those regions of the seat cover at which folds or creases have formed as they were being covered. Under the action of the steam and a mechanical treatment (ironing) optionally taking place at the same time, the seat cover is smoothed. The seat is subsequently ready for installation in the motor vehicle.

This generally customary procedure requires intensive use of labor and is furthermore associated with the risk that, with the local, intensive action of the steam, undesirable changes occur locally to the

appearance of the seat cover.

Object

The invention is based on the object of bringing about a uniform treatment of the seat cover with little outlay.

Achievement

The object is achieved according to the invention by the fact that, in a method of the generic type, the fibers of the covering material are softened in a treatment chamber by the supply of moisture and are smoothed by the action of a drawing force extending the covering material.

The moisture content of the fibers after the moistening in the treatment chamber is preferably between 2 and 10% by weight, preferably approximately 5% by weight. In order to obtain an optimum treatment result, the moisture content of the fibers can be measured directly or indirectly, the moistening being continued until a predetermined moisture content is reached.

The moistening in the treatment chamber advantageously takes place at an air temperature of 100 to 150°C, preferably between 125 and 130°C.

In this case, provision can be made for the surface temperature of the covering material or added-on accessory parts to be measured and for the air temperature and/or the treatment time to be set in such a manner that a permissible temperature load is not exceeded. The addition of moisture to the treatment chamber preferably takes place by the supply of steam, in particular water vapor. In this case, additives, in particular odorous substances, smoothing agents or stain-inhibiting addition agents can be added to the

steam.

According to one preferred variant of the method, the drawing force is produced by the depositing of the cover onto an elastically compressible base, in particular of an elastically deformable foam material. The covering material can either be moistened in the treatment chamber after it is deposited onto the elastically compressible base or can be moistened in the treatment chamber and only subsequently be deposited onto the base with elastic compression of the latter.

The covering material is preferably dried after the moistening, in which case the moisture content of the fibers after the drying is to be between 0 and 1.0% by weight, preferably between 0.05 and 0.25% by weight.

In order to reduce the outlay on investment, provision may be made for the drying to take place in the same treatment chamber as the moistening. However, depending on the number of components to be treated, it is advantageous to carry out the drying in a second treatment chamber following the treatment chamber for the moistening or to carry it out outside the treatment chamber. According to one particularly advantageous method, the moisture of the fibers is directly or indirectly measured and the covering material is dried until a predetermined residual moisture is reached.

In order to rationalize the treatment, a plurality of covers provided for moistening can be grouped, if appropriate connected to the entire interior fitting piece, on a transport auxiliary device, for example a pallet, and can be supplied together to the treatment chamber.

A largely automatic operation of the treatment device, in particular with the treatment product continuously

changing, can be brought about by the covering material to be treated in the treatment chamber and/or accessory parts to be treated at the same time in the treatment chamber as a consequence of being directly or indirectly connected to said covering material being recognized, then treatment parameters which are suitable for the treatment of the covering material and/or which avoid damaging the accessory parts to be treated at the same time being selected, and the covering material and/or accessory parts to be treated at the same time being treated using the selected treatment parameters. In this case, the covering material to be treated, accessory parts which are to be treated at the same time as the latter and/or a transport auxiliary device (used if appropriate) are advantageously provided with means for identifying the covering material and/or accessory parts. These identification means preferably permit automated recognition and comprise, for example, a bar code and/or a chip coding.

In the case of interior fitting pieces which comprise components having differing resistance to heat and moisture, moisture- and/or temperature-sensitive regions of the covering material or accessory parts are preferably covered during the treatment in the treatment chamber. Furthermore, provision may be made for moisture- and/or temperature-sensitive regions of the covering material or accessory parts to be protected during the treatment in the treatment chamber by localized reduction of the effect of treatment devices or to be brought into direct or indirect connection with said covering material only after treatment of the latter in the treatment chamber.

The steam which is preferably used for the supply of the moisture can be introduced into the treatment chamber via nozzles, for example. In this case, according to one preferred variant of the invention,

the contour of the covering material to be treated can be determined, a predetermined distance between the nozzles and the covering material can be set, and the covering material can then be treated in the treatment chamber.

The determination of the contour takes place, for example, by mechanical scanning of the covering material, but alternatively also without contact, in particular using ultrasonic or laser sensors.

The covering material can advantageously additionally be subjected in the treatment chamber to automatic mechanical processing, in particular by means of brushes or rollers.

The object is furthermore achieved by an interior fitting piece for a motor vehicle, which interior fitting piece is treated by this method and in which an elastically compressible base, in particular of an elastically deformable foam material, is preferably arranged under the covering material. The interior fitting piece can comprise, for example, an elastically upholstered vehicle seat and/or elastically upholstered seat add-on parts (head restraints, arm rests or the like) with an upholstered cover, but also an extensive piece of trim for the vehicle interior with a rigid support, a covering material and an upholstered layer arranged between the support and covering material, in particular a roof lining, a door or pillar trim or a dashboard.

Figures

The single figure illustrates by way of example and schematically a method sequence according to the invention using the example of treating vehicle seats.

The vehicle seats 1, which are already provided with

the seat cover and can be seen in top view, are grouped and orientated, prior to the treatment, on a transport auxiliary device in the form of a pallet 2 which can be moved through the manufacturing hall in the direction of the arrow A by means of a transport device 3. A programmable chip 4 in which information items about the particular product being transported are stored, for example concerning the covering material used or about special fitting features of the vehicle seats 1, is attached to the side of the pallet 2. These information items can be already used in order to direct preceding manufacturing sequences.

The information items stored in the chip are read out by means of a reading device 5 and passed on to a computer 6 which, on the basis of them, selects suitable values from previously stored treatment parameters, for example for temperature, air moisture or treatment duration, and passes them onto a steam generator 7 (phase A). The pallet is then transported into a first treatment chamber 8 in which the contour of the vehicle seats 1 is established by means of ultrasonic sensors 9. The measured values are likewise passed on to the computer 6 which subsequently moves the steam nozzles 10 (which can be displaced by motor) to a predetermined distance in front of the vehicle seats 1. In the treatment chamber 8, the treatment of the covering material by a temporary increase in its moisture content now takes place by means of the supply of a heated air/steam mixture from the steam generator 7, the fibers softening by the supply of moisture (phase B). By the action of a drawing force which extends the covering material and is generated by the compression of the seat cushion and the application, which is associated therewith, of tensile stresses into the covering material, an automatic smoothing process takes place.

After the treatment time provided for the treatment of

the vehicle seats concerned finishes, the pallet 2 is conveyed further into a further treatment chamber 11 (phase C) in which the covering material and the vehicle seats are dried in their entirety. For this purpose, hot air is blown into the treatment chamber 11 by means of a fan 12 and a heating system 13, said hot air escaping again on the opposite side of the treatment chamber 11 via an outlet connection 14. Arranged in the outlet connection 14 is a moisture sensor 15 which measures the moisture content of the escaping air and passes it on to a computer 16. The drying process is ended only when the measured moisture has reached a predetermined value. The pallet 2 is subsequently moved out of the treatment chamber 11 (phase D). The vehicle seats can now be conveyed further for installation into the associated motor vehicle.

Reference numbers

1	Vehicle seat
2	Pallet
3	Transport device
4	Chip
5	Reading device
6	Computer
7	Steam generator
8	Treatment chamber
9	Ultrasonic sensor
10	Steam nozzle
11	Treatment chamber
12	Fan
13	Heating system
14	Outlet connection
15	Moisture sensor
16	Computer